

What is claimed is:

1 1. A video data recording apparatus comprising:
2 a detection unit operable to detect a change in an
3 attribute of input video data;
4 a recording unit operable to record the video data
5 to a recording medium;
6 a generating unit operable to generate playback
7 control information which shows a position in the video
8 data at which the change in the attribute was detected;
9 and
10 a control unit operable to control the recording unit
11 so that the recording unit records the playback control
12 information to the recording medium.

1 2. The video data recording apparatus of Claim 1,
2 wherein
3 the detection unit detects a change in the attribute
4 of the input video data from a first attribute to a second
5 attribute and from the second attribute to the first
6 attribute; and
7 the first attribute and the second attribute are
8 defined as one of (a) the first attribute being one of (i)
9 stereo, (ii) monaural, and (iii) multiplex audio data, and

10 the second attribute being one of (i), (ii), and (iii) and
11 being different to the first attribute, and (b) the first
12 attribute permitting copying video data to which a copy
13 protect signal is attached, and the second attribute
14 prohibiting copying of video data to which a copy protect
15 signal is attached.

01 3. The video data recording apparatus of Claim 2,
02 wherein

03 the playback control information indicates to a video
04 data playback apparatus a playback start point and a
05 playback end point of the video data; and

06 the generating unit generates the playback control
07 information so that the detection position of the change
08 in the attribute from the first attribute to the second
09 attribute is the playback end point.

1 4. The video data recording apparatus of Claim 3,
2 further comprising:

3 a retaining unit operable to retain lag data which
4 shows a lag time including an amount of time required for
5 the detection unit to detect the change in the attribute
6 and an amount of time required from when the detection unit
7 detects the change in the attribute until the recording

8 unit stops recording;

9 wherein the recording unit stops recording when the
10 detection unit detects the change from the first attribute
11 to the second attribute; and

12 the generating unit makes a head of the video data
13 of which recording has stopped the playback start point,
14 and a time which is the lag time subtracted from an end
15 time of the video data of which recording has stopped, the
16 playback end point.

1 5. The video data recording apparatus of Claim 4,
2 wherein

3 the recording unit starts recording new video data
4 when the detection unit detects the change in the attribute
5 from the second attribute to the first attribute.

1 6. The video data recording apparatus of Claim 3 further
2 comprising:

3 a retaining unit operable to retain lag data which
4 shows a lag time including an amount of time required for
5 the detection unit to detect the change in the attribute,

6 wherein the recording unit continues to record video
7 data after the detection unit detects the change in the
8 attribute; and

9 the generating unit makes one of (a) a head of the
10 video data and (b) a detection position where the attribute
11 changes from the second attribute to the first attribute,
12 the playback start point, and, when the change in the
13 attribute is detected by the detection unit, makes a time
14 which is the lag time subtracted from the end time of the
15 video data of which recording has stopped, the playback
16 end point.

1 7. The video recording apparatus of Claim 2, wherein
2 the playback control information includes first
3 information which instructs the video data playback
4 apparatus of a playback start point and a playback end point
5 of the video data, and second information which shows a
6 detection position in the video data of the change in the
7 attribute.

1 8. The video data recording apparatus of Claim 7,
2 wherein
3 the second information further includes text data
4 which shows that the change in the attribute at the
5 detection positions shown in the second data is from the
6 first attribute to the second attribute, or is from the
7 second attribute to the first attribute.

1 9. A video data playback apparatus comprising:
2 a reading unit operable to read playback control
3 information and video data from a recording medium, the
4 playback control information showing a position in the
5 video data at which a change in an attribute occurs;
6 a playback unit operable to play back the read video
7 data;

8 a control unit operable to control the reading unit
9 so that the reading unit reads from the head of the video
10 data to the position at which the change in the attribute
11 occurs, according to the read playback control
12 information.

1 10. The video data playback apparatus of Claim 9, wherein
2 the change in the attribute is a change in the video
3 data from a first attribute to a second attribute; and
4 the first attribute and the second attribute are
5 defined as one of (a) and (b), in (a) the first attribute
6 being one of (i) stereo, (ii) monaural, and (iii) multiplex
7 audio data, and the second attribute being one of (i), (ii),
8 and (iii) and being different to the first attribute, and
9 in (b) the first attribute permitting copying, and the
10 second attribute prohibiting copying.

1 11. The video data playback apparatus of Claim 10,
2 wherein

3 the playback control information indicates to a video
4 data playback apparatus a playback start point and a
5 playback end point of the video data;

6 the playback start point shows one of (a) the head
7 of the video data, and (b) a position in the video data
8 at which the attribute changes from the second attribute
9 to the first attribute, and the playback end point shows
10 a position in the video data where the attribute changes
11 from the first attribute to the second attribute; and

12 the control unit controls the reading unit so that
13 the reading unit reads from the playback start point to
14 the playback end point of the video data.

1 12. The video data playback apparatus of Claim 10,
2 wherein

3 the playback control information includes first
4 information indicating to the video data player the
5 playback start point and the playback end point of the video
6 data, and second information showing the position at which
7 the change in attribute occurs; and

8 the control unit controls the reading unit so that
9 the reading unit reads the video data from the playback

10 start point to the position at which the change in attribute
11 occurs shown in the second information.

1 13. The video playback apparatus of Claim 12, wherein
2 the second information shows a plurality of positions
3 at which the change in the attribute occurs, and the second
4 information further includes text data which shows that
5 one of the changes in the attribute shown in the second
6 information is a change from the first attribute to the
7 second attribute, or the second attribute to the first
8 attribute; and

9 the control unit controls the reading unit so that
10 the reading unit reads the audio data from one of the
11 positions at which the second attribute changes to the
12 first attribute to one of the positions at which the first
13 attribute changes to the second attribute.

1 14. A recording medium for recording video data, the
2 following being recorded therein:

3 playback control information showing a position in
4 the video data at which a change in an attribute of the
5 video data occurs, the change being a change in the video
6 data from a first attribute to a second attribute; and
7 the first attribute and the second attribute are defined

8 as one of (a) and (b), in (a) the first attribute being
9 one of (i) stereo, (ii) monaural, and (iii) multiplex audio
10 data, and the second attribute being one of (i), (ii), and
11 (iii) and being different to the first attribute, and in
12 (b) the first attribute permitting copying, and the second
13 attribute prohibiting copying.

15. The recording medium of Claim 14, wherein
the recording medium is a rewritable optical disc.

16. The recording medium of Claim 14, wherein
the playback control information indicates to a video
data playback apparatus a playback start point and a
playback end point of the video data; and
the playback start point shows one of (a) the head
of the video data, and (b) a position in the video data
at which the attribute changes from the second attribute
to the first attribute, and the playback end point shows
a position in the video data where the attribute changes
from the first attribute to the second attribute.

17. The recording medium of Claim 14, wherein
the playback control information includes first
information indicating to the video data player the

4 playback start point and the playback end point of the video
5 data, and second information showing the position at which
6 the change in the attribute occurs.

1 18. The recording medium of Claim 17, wherein
2 the second information further includes text data
3 which shows that the change in the attribute at the
4 detection positions shown in the second data is from the
5 first attribute to the second attribute, or is from the
6 second attribute to the first attribute.

1 19. A recording method for video data, comprising:
2 a first recording step for recording input video data
3 successively to a recording medium;
4 a detection step for detecting a change in an
5 attribute of the video data;
6 a generating step for generating playback control
7 information which shows a position in the video data at
8 which the change in the attribute was detected; and
9 a second recording step for recording the playback
10 control information in correspondence with the video data,
11 to the recording medium.

1 20. The recording method of Claim 19, wherein

2 the detection step detects a change in the attribute
3 of the input video data from a first attribute to a second
4 attribute and from the second attribute to the first
5 attribute; and

6 the first attribute and the second attribute are
7 defined as one of (a) the first attribute being one of (i)
8 stereo, (ii) monaural, and (iii) multiplex audio data, and
9 the second attribute being one of (i), (ii), and (iii) and
10 being different to the first attribute, and (b) the first
11 attribute permitting copying of video data to which a copy
12 protect signal is attached, and the second attribute
13 prohibiting copying of video data to which a copy protect
14 signal is attached.

1 21. The recording method of Claim 20, wherein
2 the playback control information indicates to a video
3 data playback apparatus a playback start point and a
4 playback end point of the video data; and
5 the generating step generates the playback control
6 information so that the detection position of the change
7 in the attribute from the first attribute to the second
8 attribute is the playback end point.

1 22. The recording method of Claim 21, wherein

2 the recording step stops recording when the detection
3 step detects the change from the first attribute to the
4 second attribute; and

5 the generating step makes a head of the video data
6 of which recording has stopped the playback start point,
7 and a time which is a lag time subtracted from an end time
8 of the video data of which recording has stopped, the
9 playback end point, the lag time being an amount of time
10 required for the detection step to detect the change in
11 the attribute and an amount of time required from when the
12 detection step detects the change in the attribute until
13 the recording step stops recording.

21 23. The recording method of Claim 22, wherein
22 the recording step starts recording of new video data
23 when the detection step detects the change in the attribute
24 from the second attribute to the first attribute.

1 24. The recording method of Claim 20, wherein
2 the recording step continues recording of video data
3 after the change in the attribute is detected in the
4 detection step; and
5 the generating step makes one of (a) a head of the
6 video data and (b) a detection position where the attribute

7 changes from the second attribute to the first attribute,
8 is made the playback start point, and, when the change in
9 the attribute is detected by the detection unit, makes a
10 time which is the lag time subtracted from the end time
11 of the video data of which recording has stopped the
12 playback end point,

13 wherein the lag time is an amount of time required
14 for the detection step to detect the change in the
15 attribute.

25. The recording method of Claim 19, wherein
2 the playback control information includes first
3 information which instructs the video data playback
4 apparatus of a playback start point and a playback end point
5 of the video data, and second information which shows a
6 detection position in the video data of the change in the
7 attribute.

1 26. The recording method of Claim 25, wherein
2 the second information further includes text data
3 which shows that the change in the attribute at the
4 detection positions shown in the second data is from the
5 first attribute to the second attribute, or is from the
6 second attribute to the first attribute.

1 27. A playback method for video data, comprising:

2 a first reading step for reading playback control

3 information from a recording medium, the playback control

4 information showing a position in the video data of a change

5 in an attribute;

6 a specification step for specifying, according to the

7 read playback control information, a playback segment from

8 the head of the video data to the position in the video

9 data of the change in the attribute;

10 a second reading step for reading video data which

11 corresponds to the specified playback segment, from the

12 recording medium; and

13 a playback step for playing back the read video data.

14

15 28. The playback method of Claim 27, wherein

2 the change in the attribute is a change in the video

3 data from a first attribute to a second attribute; and

4 the first attribute and the second attribute are

5 defined as one of (a) and (b), in (a) the first attribute

6 being one of (i) stereo, (ii) monaural, and (iii) multiplex

7 audio data, and the second attribute being one of (i), (ii),

8 and (iii) and being different to the first attribute, and

9 in (b) the first attribute permitting copying, and the

10 second attribute prohibiting copying.

1 29. The playback method of Claim 28, wherein
2 the playback control information indicates to a video
3 data playback apparatus a playback start point and a
4 playback end point of the video data;
5 the playback start point shows one of (a) the head
6 of the video data, and (b) a position in the video data
7 at which the attribute changes from the second attribute
8 to the first attribute, and the playback end point shows
9 a position in the video data where the attribute changes
10 from the first attribute to the second attribute; and
11 the specifying step specifies a segment of the video
12 data from the playback start point to the playback end point
13 as the playback segment.

1 30. The playback method of Claim 28, wherein
2 the playback control information includes first
3 information indicating to the video data player the
4 playback start point and the playback end point of the video
5 data, and second information showing the position at which
6 the change in attribute occurs; and
7 the specifying step specifies a segment of the video
8 data from the playback start point to the position of the
9 change in the attribute shown by the second information,
10 as the playback segment.

1 31. The playback method of Claim 30, wherein
2 the second information shows a plurality of positions
3 of the change in the attribute, and further includes text
4 data which shows that the change in the attribute at the
5 detection positions shown in the second data is from the
6 first attribute to the second attribute, or is from the
7 second attribute to the first attribute; and

8 the specifying step further specifies, based on the
9 text data, a segment from a position in the video at which
10 the second attribute changes to the first attribute, to
11 a position where the first attribute changes to the second
12 attribute, as a playback segment.

1 32. A program recording medium having recorded thereon
2 a program for recording video data to a video recording
3 medium, and being readable by a video data recording
4 apparatus which has a detection unit for detecting a change
5 in an attribute of input video data, and a recording unit
6 for recording video data to the video recording medium,
7 the program including:

8 a generating program segment for generating playback
9 control information which shows a position in the video
10 data at which the change in the attribute was detected;
11 and

12 a control program segment for controlling the
13 recording unit so that the recording unit records the
14 playback control information to the recording medium.

1 33. A program recording medium having a program recorded
2 thereon for playing back video data recorded in a video
3 recording medium, and being readable by a video data
4 playback apparatus which has a reading unit for reading
5 video data from the video recording medium, the program
6 realizing on a computer:

7 a first reading step for reading playback control
8 information from a recording medium, the playback control
9 information showing a position in the video data of a change
10 in an attribute;

11 a specification step for specifying, according to the
12 read playback control information, a playback segment from
13 the head of the video data to the position in the video
14 data of the change in the attribute;

15 a second reading step for reading video data which
16 corresponds to the specified playback segment, from the
17 recording medium; and

18 a playback step for playing back the read video data.

1 34. A program executable by a computer in a video data

2 recording apparatus which has a detection unit for
3 detecting a change in an attribute of input video data,
4 and a recording unit for recording the video data to the
5 video recording medium, the program including:

6 a generating program segment for generating playback
7 control information which shows a position in the video
8 data at which the change in the attribute was detected;
9 and

10 a control program segment for controlling the
11 recording unit so that the recording unit records the
12 playback control information to the recording medium.

1 35. A program executable by a computer in a video data
2 playback apparatus which has a reading unit for reading
3 video data from a video recording medium, the program
4 realizing on the computer:

5 a first reading step for reading playback control
6 information from a recording medium, the playback control
7 information showing a position in the video data of a change
8 in an attribute;

9 a specification step for specifying, according to the
10 read playback control information, a playback segment from
11 the head of the video data to the position in the video
12 data of the change in the attribute;

13 a second reading step for reading video data which
14 corresponds to the specified playback segment, from the
15 recording medium; and
16 a playback step for playing back the read video data.